2012

The Runnins River Report - 2011

Brent Rebelo

With our biology class we went to the runnins river, which is a local river in the town of seekonk, and did a series of

Runnins River Project 2011

The Runnin's River watershed is 70% of the land in Seekonk.

We went to the river to:

- Test the chemistry
- Record biodiversity
- Measure the MGBI

We want to know if the river is polluted.

1 Rebello

Used MGBI (universal measurement to see how healthy the river is)

Location

- Within the gentle community of Seekonk there lies an even deeper community in and around the Runnins river.
- The Biology II students at Seekonk High School went to Pamden Lane, the upstream site and Burrs Pond, the down stream site.
- The residents at Pamden Lane let us take samples from the Runnins river located behind their house.
- Burrs pond is located after two dams, and a golf course, about two miles downstream.

Pamden Lane

Coordinates: 41° 50'00.02" N 71° 19' 33.85" W

Burrs Pond

Coordinates: 41° 41'48.22" N 71° 20'16.27" W

Slide 2 Stiness

Pamden Lane, Upstream Site

What does the site look like?

- The residents yard starts a few feet away from the river, after a few feet of brushy edge.
- There are many different species of plants surrounding the site.
- There are rocks around the edges in the shallowest part of the river and the bottom turns sandy at the deepest part.

Slide 3 Ashkar
Pic Dark, very general

Burr's Pond

down stream site

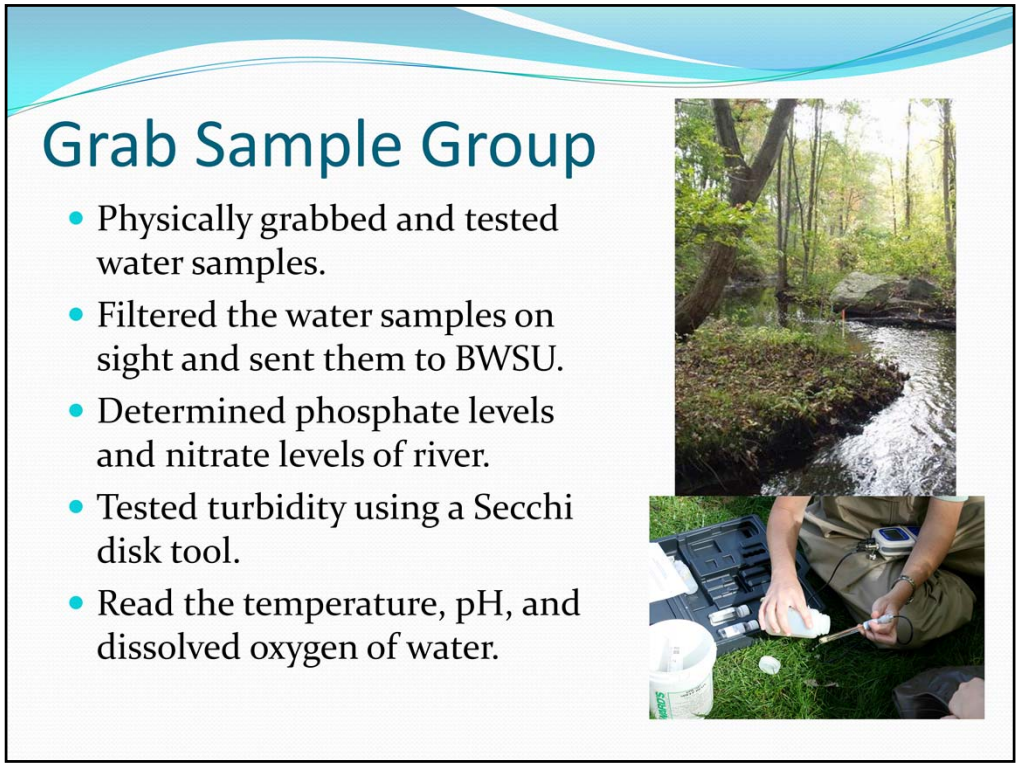
-The GPS coordinates for the site:
41° 49' N 71° 19' W

- A large amount of bugs living in/on the water, such as Trichoptera in the water and mosquitoes or flies outside the water.

- Many trees, plants, and rocks occupy the area in and around the river.

- Waterfall increases the turbidity of the water and increases the O_2 level.

Medeirosk4



Slide 5 Hashway

Phosphate & nitrate levels tested so we could calculate how much of each went through this point over a certain amount of time.
Turbidity-how far underwater can you see/visibility.

Water testing Phosphates and Nitrates

•Our group sent off the samples of water to Bridgewater State University. There they analyzed our water samples. We used the results of the samples in our project

•We multiplied the concentration of the nutrients by the discharge to determine load of nitrates and phosphates.

Amadio-

Describe how we were able to analyze water
Multiplied discharge of the consentration to determine load and concentration of nitrates and phosphates

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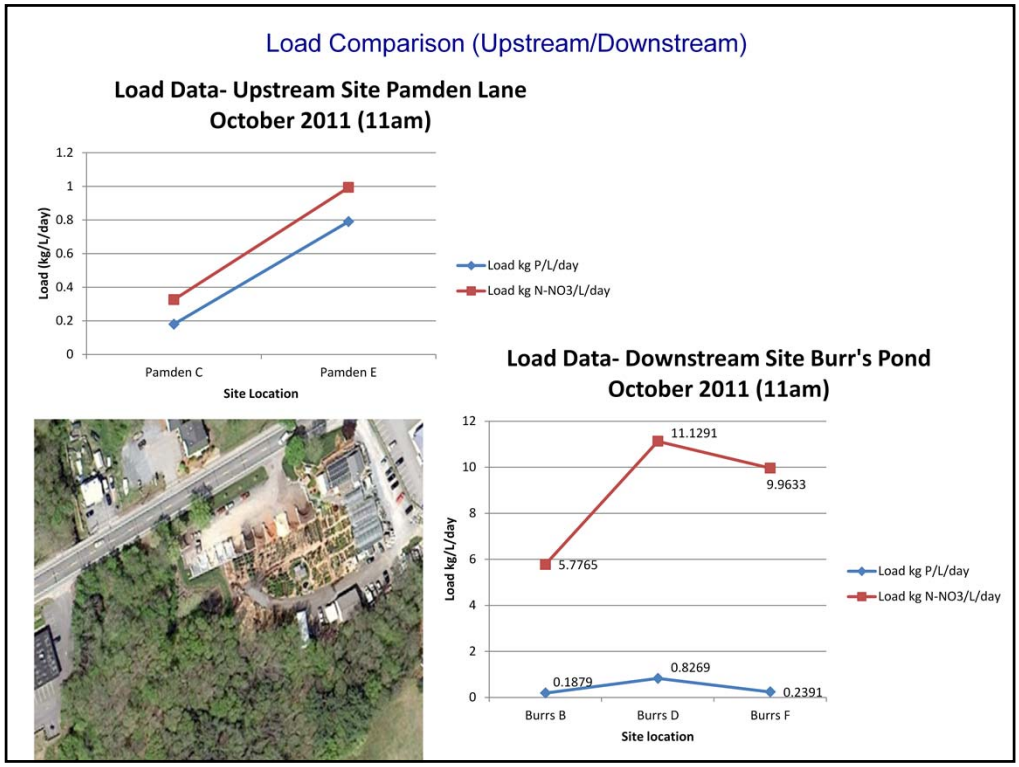


Slide 7 & 8 (O' Halloran & Rebello)

Mike---
Two graphs comparing phosphates and Nitrates at upstream site, Pamden Lane, and downstream site, Burr's Pond.

Upstream: Pamdem Lane- Pamdem C has phosspates levels near 0.2, nitrates near 0.3 Difference about 0.1. Pamden E has phosphates at 0.8, Nitrates at 1.0, difference of 0.2. Not a significant increase between Phospates and Nitrates.

Downstream: Burr's pond-phosphates go from about .2 to .8 difference of about .6. big difference. Looking at nitrates, it goes from about 6.0 to ll.0. large amount of nitrates, big difference between period b to period d and f.

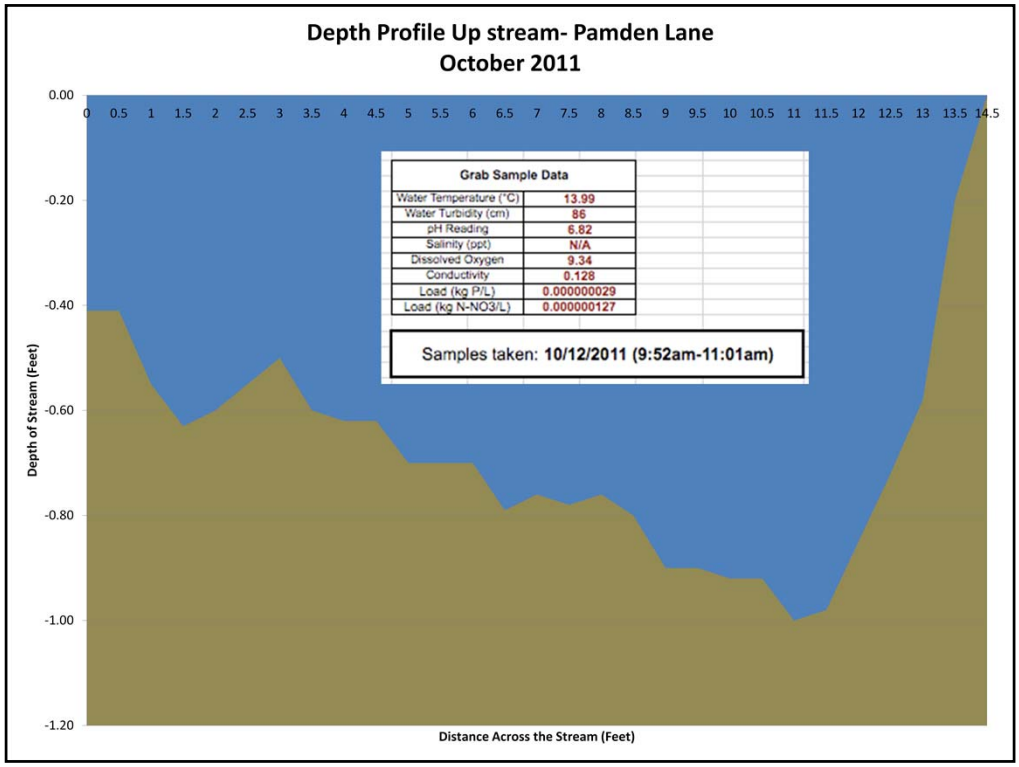
Brent----
Runnin's river runs through many properties in seekonk, such as roads, backyards of houses, and the fire fly golf course. Along the route of the river, there is a construction supply area. Construction supply area contains many nutrients and chemicals, used for construction. Through precipitation, possible runoff could place nutrients and chemicals in the river. The current of the river could bring chemicals, nutrients all the way to burr's pond, where a recording of high amounts of phosphates, and nitrates were taken. That possible run off from construction supply could be the source to high amounts of phosphates and Nitrates.

slide 7

Measuring depth and flow

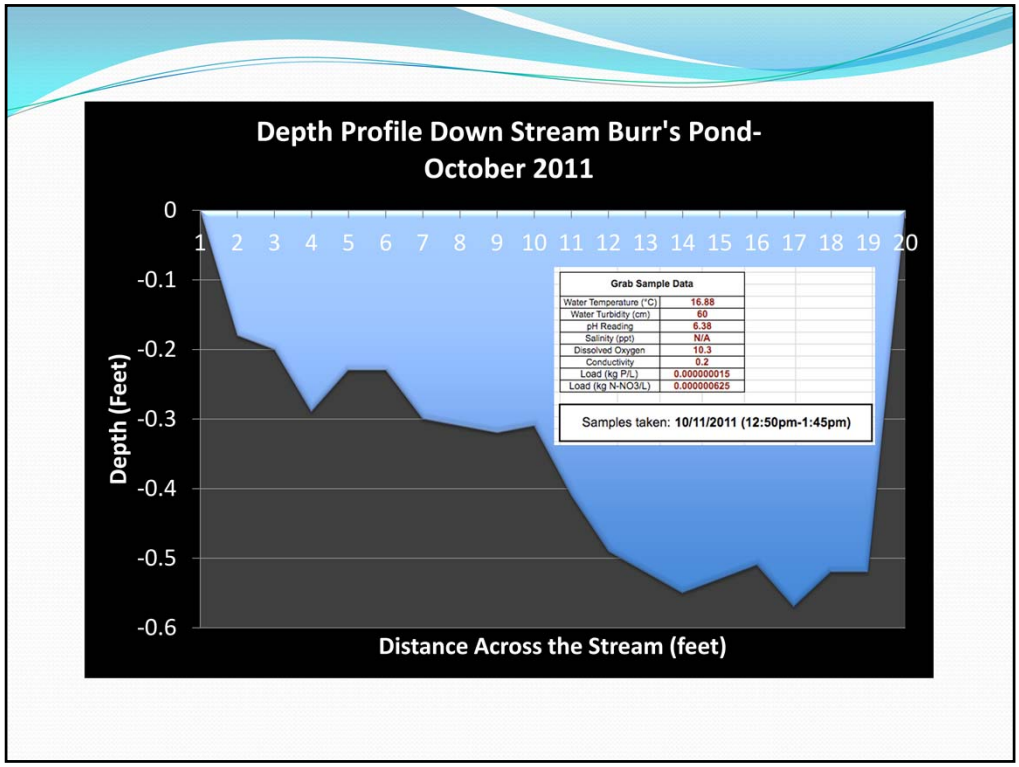
- Our group used a device called US Geological Society depth and Marsh McBirney flow meter to measure the flow depth in each section of the river.
- We measured depth and flow every 1-2 feet across the river.
- We calculated the average area and flow, and calculated the discharge for each site.

Ashkar-

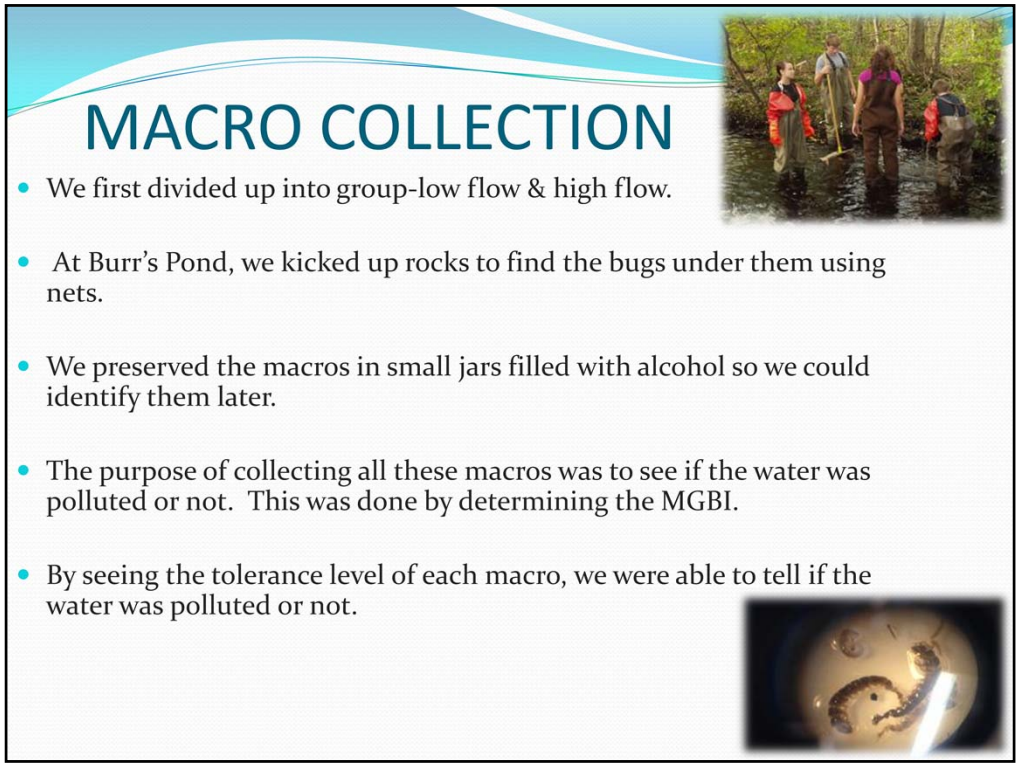


Stiness

This is the graph for the Depth Profile Up Stream- Pamden Lane.

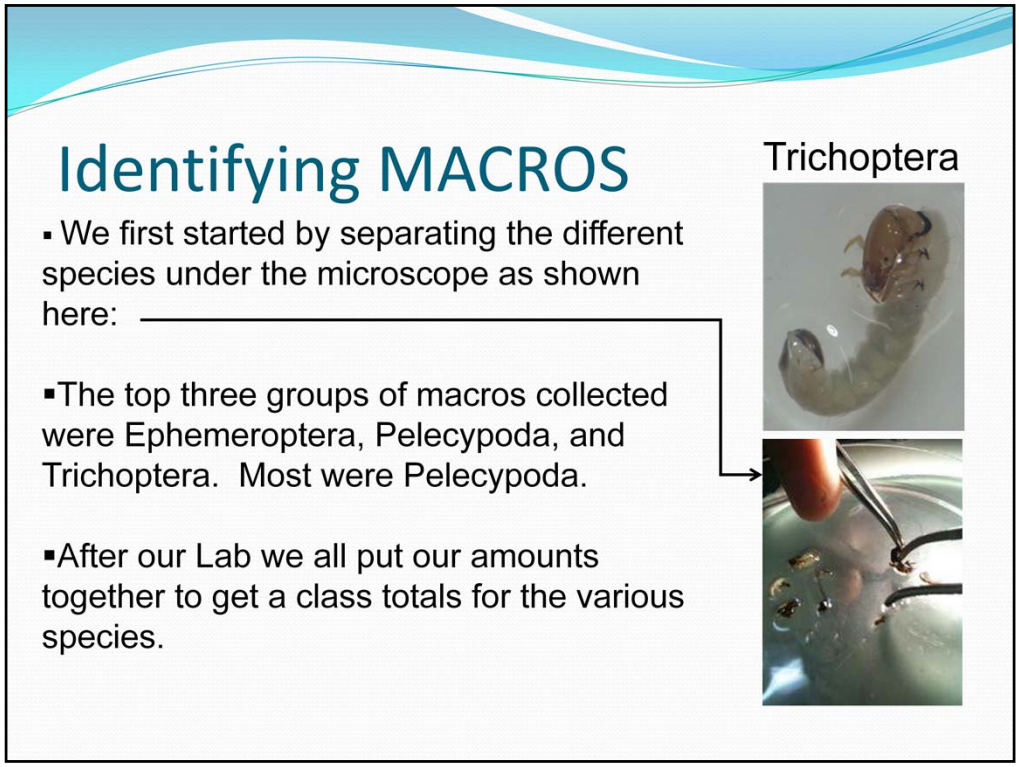


Slide 11 Novotny
This graph is showing the size and shape of the river. The lowest depth in the river was around 7 inches deep. The river was around 20 feet wide. In order to catch the bugs we had to scrub the bottom of the river to kick up the bugs from the river bed. The flow through out the day had an average of 5.8 cubic feet per second. We measured every 2 feet, to find a rough estimate of the rivers depth and profile.



Slide 12- Moszkowicz

MGBI: major group biotic identification (This will be discussed in a later slide {slide 19 & 20})

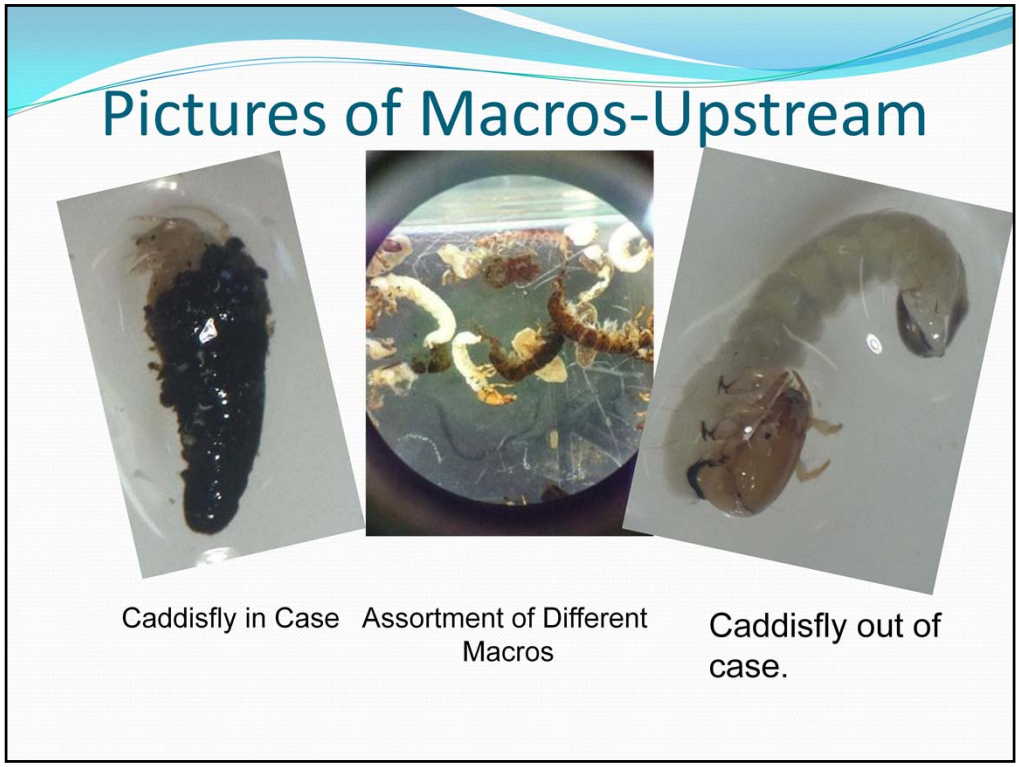


Slide 13- Ferreira

We used a "Stereo Microscope" to separated the different species into different Petri Dishes.
Pleycpoda (fingernail Clams) they were actually the highest #

We found many species top 3 being Ephemeroptera, Plecoptera, and Trichopter

We separated them to allow them to be counted to find the MGBI.



Slide 15
Amanda Ryan

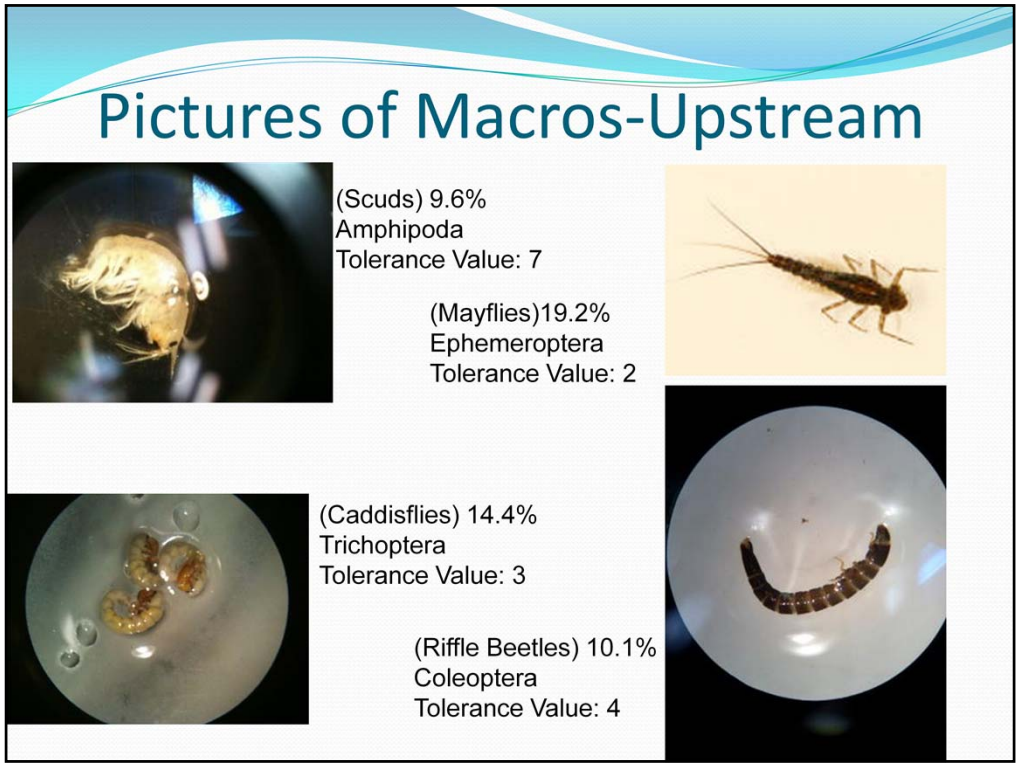
Here is some pictures of the bugs that we found.

If you look at the first picture it may seem like it was an easy process, but this is the cleaned up version of the picture. We spent hours picking the bugs out of muddy water filled with sticks and leaves with tweezers.

It was surprising to see all the different bugs come from a stream that looked like it had nothing in it.

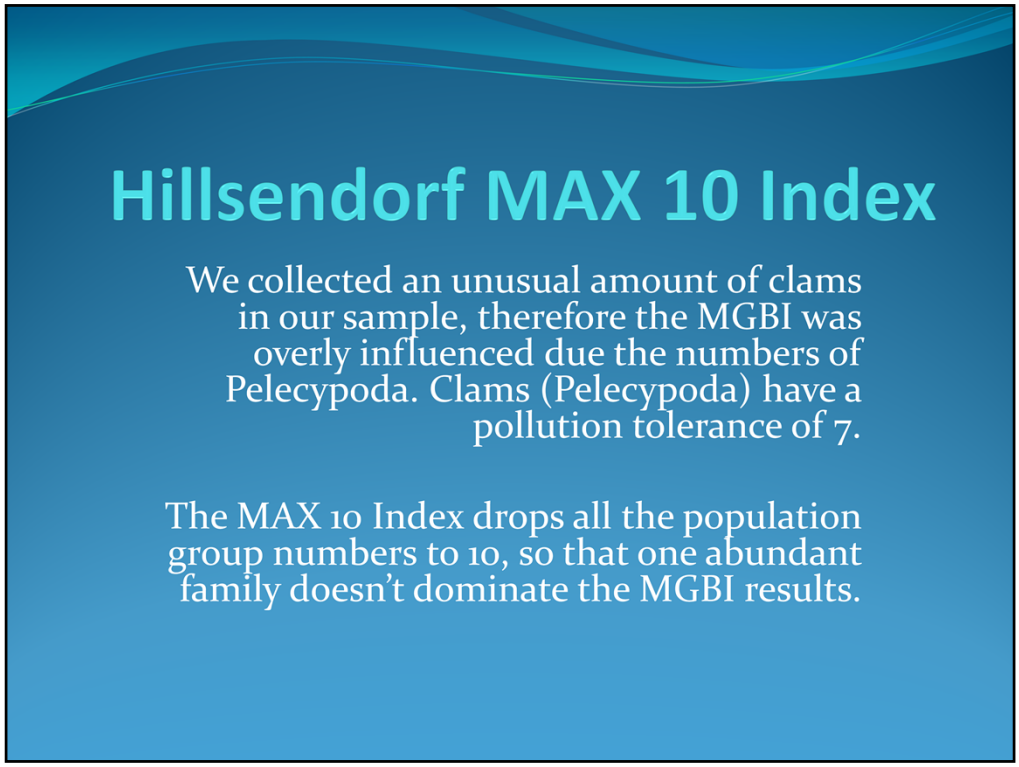
We used pictures and books to help identify the types of bugs we had.

The picture on the left is a caddisfly in it's casing, and on the right is a caddisfly outside of its casing.



Slide 14
Monica Doorley
http://www.pbase.com/tmurray74/image/61450215

Diptera was 23.6 % and the most abundant macro at the upstream site.

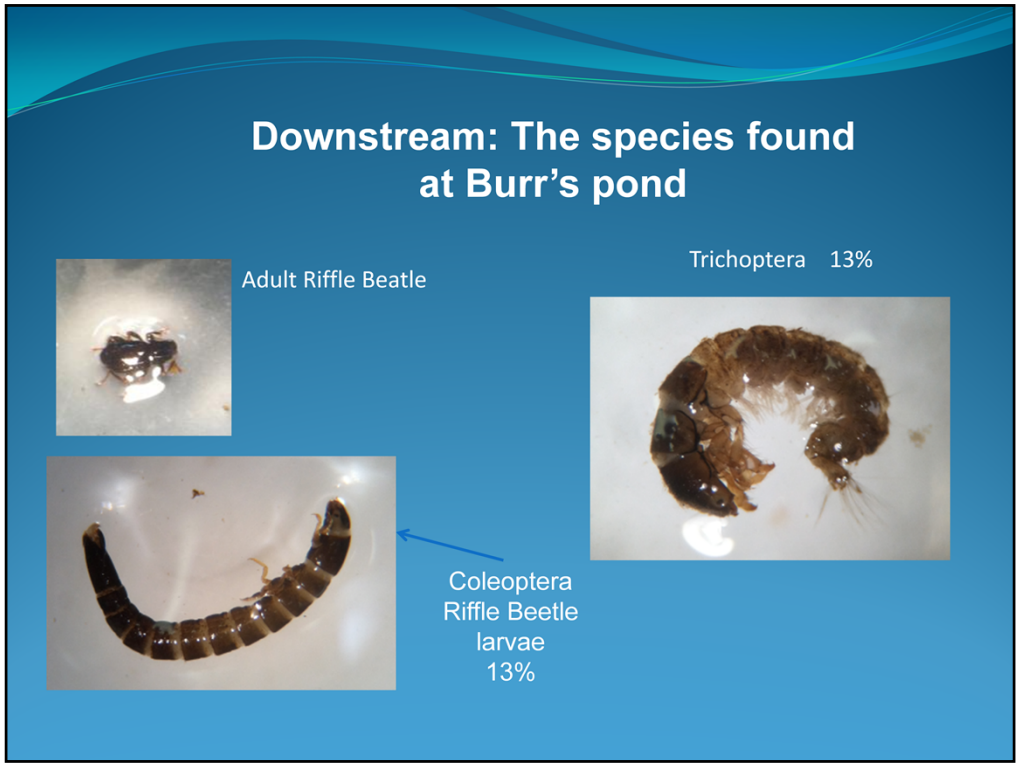


Slide 16 Millard
MGBI- Major Biotic Index
Clams ended up rising over all of the organisms so we used the Hillsendorf MAX 10 Index so that the clams wouldn't dominate and the pollution tolerance would be reasonable.
A MBGI of 7 is a high value that indicates more pollution

Without applying the Hillsendorf Max 10 the upstream MBGI was higher and the down stream site was lower.

Geena 17
Picture to the bottom left is a picture of trichoptera in its case. This case is made up of little rocks. Out of all the bugs we found, the trichoptera make up 10%.
Picture at the top is a picture of pelecypoda (fresh water clam). We found over 8k of these most of them are juvenile but this one is an adult. These made up10% of all the bugs.
Picture to the bottom right is a leech. Out of all the bugs we found, leeches made up 10% of the bugs.

Pollution tolerance of three that's means that it can live in polluted water but would rather not.



Lamoureux 18

-The picture to the left is an adult riffle beatle. It looks nothing like the young riffle beatle. The bottom picture is a prim example of that statement.

-The trichoptera has a pollution tolerance of 3. Which means it most likely only lives in waters that are most likely not polluted. Basically means that it doesnt have a high tolerance for pollution.

-The picture to the right is trichoptera,. Also known as caddisfly. The brown one is actually a net spinner

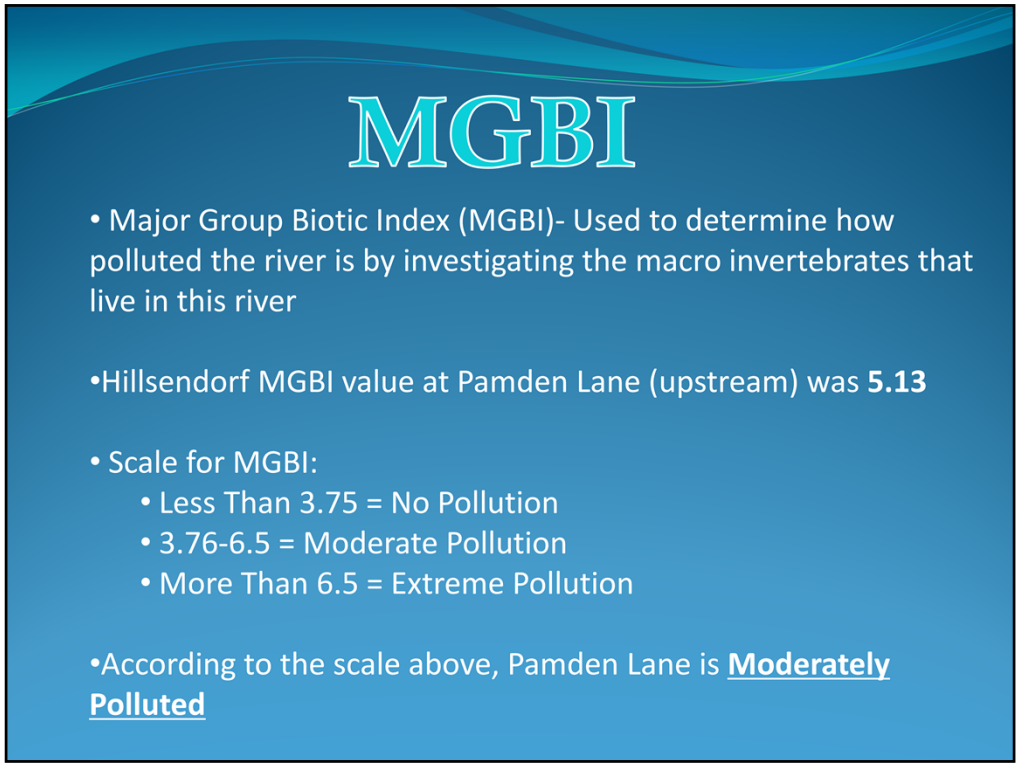
The Hirudinea Leech was almos as high as a percentage as the other two catergorys.

The trichoptera have a pollution tolerance of 3.

The coleopter has a pollution tolerance of 4. Which is a litle more tolerant than the trchoptera.

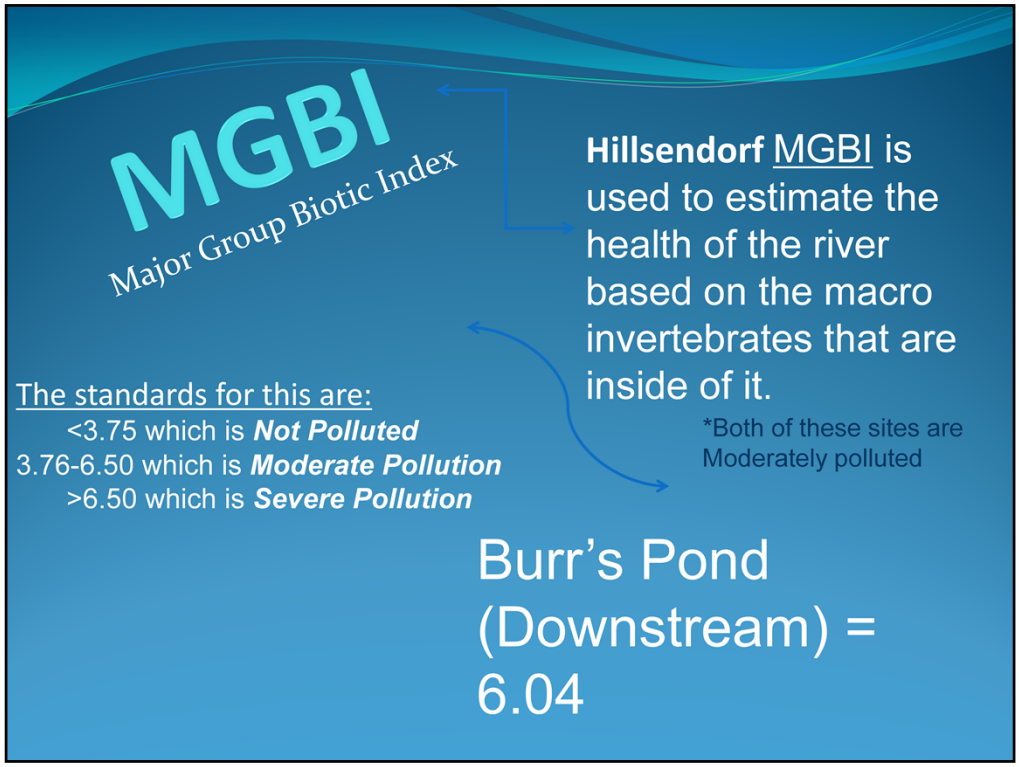
The Hirudinea has a polluton tolerance of 10, which means it can ive in water that is fuly polluted and still be okay.

Out of 645 bugs total 306 of them were trichoptera, 135 of them were coleoptera, and 11 of them were hirudinea.

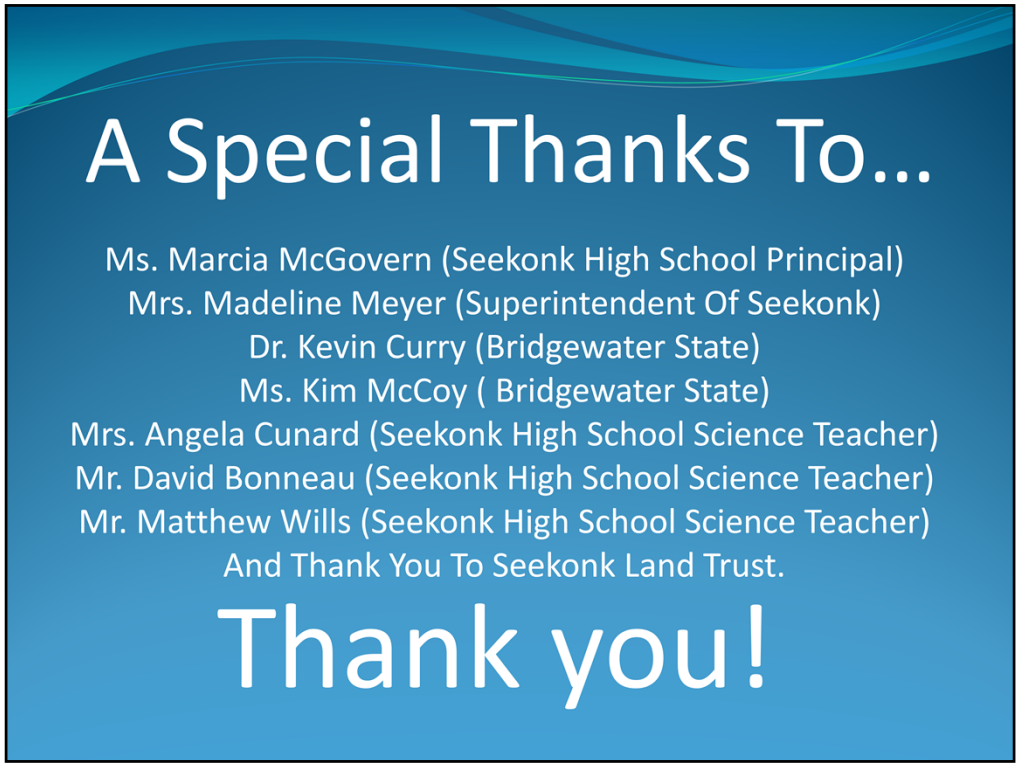


Slide 19 Sanford

Major Group Biotic Index or MGBI is used to determine how polluted a river is. The MGBI Value that we found in Pamden Lane was 5.13 making it moderately Polluted.



20 JENA SEIBER …..MGBI used to estimate the health of the river based on the macro invertebrates that are inside of it
Burr's pond= Had an MGBI of 6.04 (The site that we went to)
Both Burr's pond and Pamden Lane are Moderatly polluted after looking at the bugs & based on where we fell with the perameters



Slide 21
Any Questions?